Consumer Acceptance of Prepaid and Fee-for-Service Medical Care: Results from a Randomized Controlled Trial

Allyson Ross Davies, John E. Ware, Jr., Robert H. Brook, Jane R. Peterson, and Joseph P. Newhouse

Do consumers find the care provided by health maintenance organizations (HMOs) and that provided in the fee-for-service (FFS) system equally acceptable? To address this question, we randomly assigned 1,537 people ages 17 to 61 either to FFS insurance plans that allowed choice of physicians or to a well-established HMO. We also studied 486 people who had already selected the HMO (control group). Those who had chosen the HMO were as satisfied overall with medical care providers and services as their FFS counterparts. The typical person assigned to the HMO, however, was significantly less satisfied overall relative to FFS participants. Attitudes toward specific features of care favored both FFS and HMO, depending on the feature rated. Four differences (length of appointment waits, parking arrangements, availability of hospitals, and continuity of care) favored FFS; two (length of office waits, costs of care) favored the HMO. HMO versus FFS differences in ratings of access to care and availability of resources mirror

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Allyson Ross Davies, Ph.D. is Health Policy Analyst in the Behavioral Sciences Department, The Rand Corporation, Santa Monica, CA; John E. Ware, Jr., Ph.D. is Senior Research Psychologist in the Behavioral Sciences Department at The Rand Corporation; Robert H. Brook, M.D., Sc.D. is Senior Health Services Researcher, Systems Sciences Department, The Rand Corporation, and Professor in the Departments of Medicine and of Public Health, University of California at Los Angeles; Jane R. Peterson, B.A. is Research Assistant in the Economics Department, The Rand Corporation; and Joseph P. Newhouse, Ph.D. is Senior Corporate Fellow, The Rand Corporation. Address correspondence and requests to Dr. Davies at The Rand Corporation, 1700 Main Street, Santa Monica, CA 90406.

differences in the organizational features of these two systems that are generally considered responsible for the significantly lower medical expenditures at HMOs. Regardless of their origin, less favorable attitudes toward interpersonal and technical quality of care in the HMO have marked consequences: dissatisfaction and disenrollment.

Since the early 1970s, federal policies have actively promoted prepaid group practices and other variants of the health maintenance organization (HMO) as a promising way to reduce high medical care costs [1,2]. HMO growth, both in numbers and in enrollment, attests to the success of such policies [3,4]. The 25 percent lower costs of HMOs [5,6], however, have not been enough to attract most Americans away from the fee-for-service (FFS) system or to keep them enrolled in HMOs. In fact, some consumers need not consider premium differentials when choosing between FFS and HMO options, because their benefit plans fully cover the premiums for both [7]. Thus, consumers obviously consider attributes of HMO and FFS care other than relative costs when evaluating their options [8–10].

The acceptability of HMOs is crucial to their success in the medical marketplace. The effectiveness of many policies designed to increase price competition in medical care delivery also rests on the acceptability of HMO care. Identification of the attributes that people find more or less acceptable in HMOs relative to FFS care provides programmatically useful information to those who formulate and who implement these policies. Previous studies of acceptability compared satisfaction with care of self-selected samples—persons who voluntarily chose an HMO and those who remained in the FFS system [10–19]. We cannot be certain how to interpret the results of these studies, because they do not distinguish the effects on satisfaction of self-selection and of system of care.

In this article, we compare the satisfaction with different attributes of care reported by nonaged adults whom we randomly assigned to receive care at an HMO or to remain in the fee-for-service system. We seek to answer the question: how satisfied, relative to their fee-for-service counterparts, is a representative sample of former fee-for-service consumers when they receive HMO care? We also examine the satisfaction expressed by people who voluntarily chose the HMO, which permits us to estimate the potential consequences of self-selection in nonrandomized studies.

METHODS

SAMPLE

Our sample included people ages 17 through 61 enrolled in the Rand Health Insurance Experiment (HIE) in Seattle, Washington. We did not obtain satisfaction data from enrollees younger than 17, and did not enroll individuals older than 61.

Except for certain intentional differences, these individuals and their families represented the Seattle general population [20]. The HIE excluded: Seattle families with annual incomes over $56,000 (1983 dollars), some 1 percent of those initially contacted; those eligible for the Medicare disability program; the institutionalized; the military and their dependents; and veterans with service-connected disabilities. The experiment ran from 1976 through 1981.

EXPERIMENTAL PLANS AND INSURANCE BENEFITS

We studied two systems of care in Seattle: a prepaid group practice, Group Health Cooperative of Puget Sound (GHC), and the fee-for-service (FFS) system (see Table 1). Within GHC, we studied two different samples. The first, a control group (GHCC), represented a random subset of GHC members at the experiment's outset who met the preceding eligibility requirements, and had been enrolled in GHC for at least a year. The second, the experimental group (GHCE), was drawn from a random sample of people who had previously obtained care in the FFS system, and was randomly assigned to receive care at GHC during the experiment. We randomly assigned still others from the sample of prior FFS users to one of 11 FFS health insurance plans that varied cost-sharing requirements. The assignment of families to the GHCE and FFS experimental plans used a random sampling technique that made the distribution of family characteristics as similar as possible across plans (except for the GHCC group) [21]. Other than the GHCC group, no family belonged to a prepaid group practice at the experiment's outset.

GHC was established in 1947 as a consumer cooperative [22]. In 1976, when the HIE began, GHC served about 212,000 enrollees, or some 14 percent of the Seattle service area. A staff model HMO, GHC delivered services through one hospital (a second opened during the experiment), nine medical centers, an emergency center, and three specialty centers. Family practitioners and nonphysician providers delivered virtually all primary care. Altogether, some 233 physicians and 4,000 support staff provided care to GHC enrollees.

Table 1: Samples in Satisfaction Analyses

Sample	*Size*	*Description*
Fee-for-service (FFS)	800	Random subset of Seattle families who had been receiving FFS care and were assigned to one of 11 insurance plans in FFS system
Experimental HMO (GHCE)	737	Random subset of Seattle families who had been receiving FFS care and were assigned to receive free medical care at Group Health Cooperative
Control HMO (GHCC)	486	Random subset of GHC members who met HIE eligibility requirements

All HIE experimental plans covered ambulatory and inpatient care, preventive services, psychiatric and psychological services, and prescription drugs [23]. No premium was charged for any plan. To any family assigned a plan that required more cost-sharing than its pre-experimental insurance, the HIE paid an amount equal to its maximum possible loss. The family was not required to spend this sum on health care, and analyses indicate that such payments had a negligible effect on use [23].

GHCE enrollees paid nothing out-of-pocket for covered services (i.e., zero cost-sharing, or free care). In one experimental FFS plan, families also had no out-of-pocket costs. The other experimental FFS plans required some cost-sharing, but limited out-of-pocket expenditures to $1,000 annually per family, with reduced amounts for the poor. Study participation did not affect the insurance of GHCC families, who faced quite modest cost-sharing for some services (e.g., psychotherapy, drugs, and supplies) [5]. Those receiving care at GHC chose from among GHC physicians; those assigned to the FFS system could receive care from any physician of their choice.

In the FFS plans, roughly 75 percent of families were assigned to participate for three years; the remainder were assigned a five-year term of participation. The GHCE sample was divided evenly between three-and five-year participation. All GHCC sample families were assigned a five-year term.

The analyses reported here grouped all the FFS plans together, because we observed no satisfaction differences among people assigned to the different Seattle FFS plans. This finding replicated results from comparisons among FFS plans using satisfaction data from all six study sites [24]. Moreover, we observed similar patterns of results when we

compared GHCE with the free FFS plan and with the cost-sharing FFS plans [25]).

SATISFACTION MEASURES

Responses to the standardized 43-item Patient Satisfaction Questionnaire (PSQ) provided data for our analyses [25–28]. Participants self-administered the PSQ before experimental assignment, periodically during the study, and on scheduled exit.

PSQ items reflect the content and vernacular used by general population samples when commenting about their medical care experiences. They describe many features of care (see items in Table 2) that patients distinguish among when they evaluate care. Responses to PSQ items reflect the actual experiences patients have with these features of medical care and how they evaluate them [28]. We coded all responses so that higher scores reflected more favorable ratings of, or greater satisfaction with, medical care. The reliability and validity of the PSQ have been demonstrated in the HIE and other general population samples [25,27–29]. (Copies of the questionnaire and scoring rules are available in Davies et al. [25].)

METHODS OF ANALYSIS

To answer the question: "Do those who voluntarily choose prepaid and fee-for-service care find their care equally acceptable?," we compared satisfaction scores for the GHCC sample and all those receiving FFS care *before* the experiment began. (Attrition from the GHCC sample during the experiment meant that group best represented GHC's membership at the experiment's outset.) Because we had observed differences in the characteristics of GHCC and experimental samples [25], we compared both raw means and means adjusted for differences in personal characteristics (e.g., age, education, income).

To answer the question: "Do prepaid and fee-for-service arrangements differentially affect satisfaction with medical care, in the absence of any selection bias?," we compared the experimental GHCE and FFS samples at the end of the study. We used regression methods to estimate the influence of care arrangements and other explanatory variables on satisfaction at exit. These other variables included satisfaction with pre-experimental care arrangements, age, initial health status, and per capita income. Although the participants were assigned to the GHCE and FFS samples so these two groups would be equivalent at enrollment, regression methods provided more precise estimates of satisfaction outcomes than would simple means.

Table 2: Operational Definitions of Satisfaction Measures

Category/Measure	*Sample Item*	*Possible Score Range**
ACCESSIBILITY		
Answers to questions	If I have a medical question, I can reach someone for help without any problem	1-5
Appointment waits	It's hard to get an appointment for medical care right away	1-5
Emergency care	In an emergency, it's very hard to get medical care quickly	1-5
Office hours	Office hours when you can get medical care are good for most people	1-5
Office waiting time	People are usually kept waiting a long time when they are at the doctor's office	1-5
Parking arrangements	Parking is a problem when you have to get medical care	1-5
Travel time/convenience	It takes me a long time to get to the place where I receive medical care	2-10
AVAILABILITY		
Family doctors	There are enough family doctors around here	2-10
Hospitals and specialists	More hospitals are needed in this area	3-15
FINANCES		
Cost of care	The amount charged for medical care services is reasonable	2-10
QUALITY OF CARE		
Facilities	I think my doctor's office has everything needed to provide medical care	2-10
Interpersonal aspects	Doctors respect their patients' feelings	8-40
Technical quality	Doctors aren't as thorough as they should be	6-30

Continued

Table 2: Continued

Category/Measure	*Sample Item*	*Possible Score Range**
OVERALL		
General satisfaction	I'm very satisfied with the medical care I receive	4–20
OTHER		
Provider continuity	I see the same doctor almost every time I go for medical care	2–10
Recommended annual exam	Most people are encouraged to get a yearly exam when they go for medical care	1–5

Note: Instructions to respondents say: "On the following pages are some statements about medical care. Please read each one carefully, keeping in mind the medical care you are receiving now. If you have not received medical care recently, think about what you would expect if you needed care today. On the line next to each statement circle the number for the opinion which is closest to your own view. This is not a test of what you know. There are no right or wrong answers. We are only interested in your opinions or best impression." Five response categories accompany each item: strongly agree, agree, don't know, disagree, strongly disagree.
*The lowest possible score is equal to the number of items in the scale.

To interpret the effect of prepaid and fee-for-service care arrangements on satisfaction, we used the estimated regression equations to predict exit satisfaction scores for each group. On all measures studied, we contrasted exit satisfaction scores for the average enrollee in the GHCE and FFS samples. For some satisfaction measures, results from comparisons between systems of care differed depending on whether we compared sick and well and high- and low-income groups. In such cases, we contrasted predicted exit scores for subgroups which differed in initial health status and per capita income.

To facilitate interpretation of group differences on the satisfaction measures, we identified a point on each scale below which a score would indicate "dissatisfaction." Such scores meant the respondent had consistently indicated unfavorable opinions regarding care on all items in the scale. Based on the distributions of predicted exit values in each system of care, we then calculated the percent that fell below the cutoff score and labeled that group "dissatisfied" (see [25] for methodological details).

We followed the convention of terming a contrast "significant" if it was likely to occur by chance no more often than one time in 20 (two-

tailed test). We corrected all statistical tests of GHCE-FFS contrasts for the correlation of the error term within family and for the nonconstant variance of the error term [30,31].

POTENTIAL ARTIFACTS AND BIASES

We used several approaches to counter potential bias in our estimated exit scores and our inferences about differences in satisfaction between GHCE and FFS samples. We compared selected characteristics of families who refused the participation offer with those of families who accepted; we also compared pre-experimental satisfaction scores for these two groups. If the groups had similar values, we would have little reason to suspect bias. Our regression models included pre-experimental satisfaction scores and age, thereby controlling statistically for nonrandom differences between GHCE and FFS samples on these dimensions.

To minimize the chance that satisfaction levels during the experiment may have explained sample loss, we used the last available satisfaction score during the experiment as the outcome value for people who left the experiment prematurely. For those who completed the study, we used actual exit scores.

GHCE enrollees who moved out of the Seattle area were reassigned to the free FFS plan. Our conclusions did not differ when we included or excluded from the GHCE sample those who moved out of the Seattle area. Thus, the analyses reported here group participants in their originally assigned plan.

Data missing as a result of nonresponse amounted to less than 2 percent for any one question, so bias from this source should be negligible. Nonetheless, to include people with missing enrollment data in the analysis, we imputed scores to them [25]. The final sample for our analyses included 93.5 percent of FFS enrollees and 96.1 percent of the GHCE sample. Those who voluntarily left the experiment during the first year, and thus did not complete an on-study satisfaction questionnaire, comprise most of the missing group.

RESULTS

THREATS TO VALIDITY

Acceptance of the Enrollment Offer

Acceptance rates differed by system of care, and by cost-sharing plan within the FFS system in Seattle: 75 percent of families accepted the

offer to enroll in the GHCE group, 93 percent of families accepted the offer to join the free FFS plan, and 80 percent accepted the pay FFS plan offer. When the family's medical care decision maker was very satisfied with the overall quality of existing care and insurance coverage, the family was more likely to refuse participation (holding all other factors equal). We observed this effect of pre-experimental satisfaction on refusal regardless of the plan offered; thus, it does not compromise the GHCE versus FFS comparisons [25,32].

Of 16 comparisons between mean pre-experimental satisfaction scores, we found four significant differences between GHCE and FFS groups [24]; these comparisons were based on data obtained when both groups were in FFS. Individuals about to enter GHCE reported significantly more favorable attitudes than those who were assigned to remain in FFS plans toward ease of getting medical questions answered and costs of care, and were more apt to report seeing the same provider on most visits and having annual examinations recommended to them. Because such differences could affect the planned comparisons, all regression analyses included pre-experimental measures of these variables.

We observed only one significant difference between plans in 20 comparisons of personal or family characteristics (sociodemographics, enrollment health status, prior use of care, and prior insurance status)[25]. Those assigned to GHCE were significantly older, on average, than those assigned to FFS plans ($p < .02$, two-tailed test). Although the observed age difference may well have occurred by chance, our regressions controlled for age to guard against possible bias.

During the experiment, some participants left before their scheduled exit either voluntarily (including withdrawal to join the military), involuntarily (such as incarceration), for health reasons (becoming eligible for disability Medicare), or death. Overall, 82.6 percent of FFS enrollees completed the experiment normally by taking pre-experimental and exit questionnaires, as did 91.3 percent of GHCE enrollees. Attrition was higher on less generous plans, but was not related to pre-experimental satisfaction with quality, availability, accessibility, financial aspects, or overall care [25].

COMPARING SATISFACTION OF SELF-SELECTED SAMPLES

Those who chose different systems did not differ in their overall satisfaction (see General Satisfaction results, Table 3). The features they found satisfactory, however, differed in the two systems of care. Those

Table 3: Significant Comparisons Between Self-Selected Prepaid (GHCC) and Fee-for-Service (FFS) Groups (Pre-Experimental Data)

Measure	Adjusted Mean* GHCC	FFS
ACCESSIBILITY		
Answers to questions	3.96§	3.51
Appointment waits	2.66	2.89‡
Emergency care	3.63§	3.34
Office waits	2.70§	2.30
Parking	2.59	3.33§
AVAILABILITY		
Hospitals	6.36	6.83§
FINANCIAL ACCESS		
Costs of care	5.50§	4.81
Insurance coverage	6.50§	5.23
Payment mechanisms	5.91§	5.36
QUALITY OF CARE		
Facilities	7.50§	6.74
OTHER		
Provider continuity	7.20	7.71§
Recommended annual exam	3.63†	3.48

Note: Higher mean scores indicate greater satisfaction; coded group mean is significantly higher than mean of comparison group: † = $p < .02$; ‡ = $p < .01$; § = $p < .0001$.

*Adjusted for sample differences in sociodemographic characteristics and health status, including: age, gender, employment status, marital status, ethnicity, insurance status, family size, family income, physical and mental health, chronic and acute disease counts, and prior use of physicians and hospital care.

who had chosen GHC rated five features of care significantly more favorably than their FFS counterparts: obtaining answers to medical questions, access to emergency care, length of office waits, costs of care, and completeness of facilities. Conversely, the GHCC sample rated length of appointment waits, parking arrangements, availability of hospitals, and continuity of provider less favorably. We observed no significant differences between self-selected samples in attitudes toward convenience of location, office hours, travel time to care, availability of family doctors and specialists, and both interpersonal and technical aspects of quality.

COMPARING SATISFACTION OF EXPERIMENTAL SAMPLES

The Average Enrollee

For the average person, we observed ten significant differences between GHC and FFS care; eight favored the FFS system. GHCE enrollees' experiences produced significantly more favorable attitudes toward the length of office waits and costs of care. By contrast, the FFS sample rated appointment waits, parking arrangements, travel time and convenience to care location, availability of specialists and hospitals, interpersonal aspects of the doctor-patient relationship, and care in general significantly more favorably. FFS enrollees were also more likely to report seeing the same physician on most visits, and to have annual physical examinations recommended to them than were GHCE participants. We observed no differences between system of care in ratings of access to medical information (answers to questions) or emergency care, office hours, the availability of family doctors, completeness of facilities, or technical aspects of care [25].

Examination of the percentages of "dissatisfied" respondents indicated noteworthy differences on several of the ten significant comparisons (Table 4). Some 15 percent of GHCE experimental enrollees appeared dissatisfied with their medical care in general, whereas only 10 percent of FFS patients expressed similar dissatisfaction. Nearly 40 percent of those assigned to GHC expressed considerable dissatisfaction with appointment waits; the corresponding percentage in the FFS system was just over 25 percent. Sizable percentages in both systems of care were dissatisfied with office waits and with costs (about 14 percent and 12 percent more FFS enrollees, respectively). Although proportionally many more GHCE than FFS enrollees expressed dissatisfaction with availability of specialists and hospitals, provider continuity, travel time/convenience of care, and interpersonal aspects, *very* small percentages in either system could be considered dissatisfied with these attributes of care.

System Effects on Persons in Different Health and Income Groups

Our conclusions about differences between systems of care in ratings of accessibility, availability, finances, or recommendations for annual examinations did not differ for those who began the experiment in poor or good health, or for those in low- or high-income groups.

Table 4: Predicted Exit Satisfaction Scores for an Average Person, Raw Mean Difference, and Predicted Percent Dissatisfied, GHCE and FFS (95 Percent Confidence Interval in Parentheses)

Measures	*Predicted Mean at Exit*		*Predicted Mean Difference (GHCE Minus FFS)*	*Percent Dissatisfied**	
	GHCE	*FFS*		*GHCE*	*FFS*
ACCESSIBILITY					
Answers to questions	3.54	3.60	-.06(-.17,.05)	13.1	11.5
Appointment waits	2.80	3.13	-.33(-.46,-.21)†	39.0	27.4
Emergency care	3.41	3.43	-.02(-.22,.09)	17.4	16.8
Office hours	3.17	3.17	.00(-.10,.10)	23.3	23.3
Office waiting time	2.57	2.41	.16(.05,.26)‡	47.2	54.0
Parking arrangements	3.19	3.34	-.16(-.29,-.02)§	27.4	23.0
Travel time/convenience	7.02	7.30	-.28(-.45,-.11)¶	4.2	2.7
AVAILABILITY					
Family doctors	6.15	6.29	-.15(-.31,.02)	12.7	10.7
Specialists/hospitals	9.86	10.41	-.55(-.78,-.32)†	4.1	2.2
FINANCES					
Costs of care	4.76	4.58	.18(.01,.36)§	42.9	48.0
QUALITY OF CARE					
Facilities	6.82	6.80	.02(-.14,.18)	5.0	5.3
Interpersonal aspects	24.57	25.17	-.59(-1.07,-.12)**	4.1	3.0
Technical quality	17.72	18.03	-.31(-.65,.03)	22.7	19.8
OVERALL					
General satisfaction	12.06	12.73	-.66(-.96,-.37)†	15.4	10.0
OTHER					
Provider continuity	7.21	7.66	-.46(-.65,-.26)†	5.3	2.9
Recommended annual exam	3.27	3.47	-.20(-.30,-.10)†	19.8	14.2

Note: Sample sizes were 1,455 or 1,456 for all measures but "provider continuity," for which the sample numbered 1,443.
*See text for definition of "dissatisfied."
† $p < .0001$ § $p < .02$ ** $p < .01$ ‡ $p < .002$ ¶ $p < .001$

On three measures, however, conclusions about differences between GHCE and FFS did depend on which subgroups of enrollees we compared. The effect of system of care on satisfaction with technical quality, general satisfaction, and reported provider continuity was not the same for groups differing in initial income and health status (Table 5). All but the low-income, initially well reported greater general satisfaction in the FFS system. Similarly, we noted significantly more favorable ratings of technical quality for the high-income, initially sick FFS participants, and trends in the same direction for the low-income sick and high-income well subgroups. This pattern of findings favoring FFS care differed significantly for the low-income, initially well; this subgroup showed no differences in general satisfaction and, if anything, *greater* satisfaction at GHCE with technical aspects of care ($t = 1.60$, $p < .20$). Regardless of income, those in initially good health reported seeing the same doctor significantly more often in the FFS system than at GHCE. The low-income sick also tended to report greater provider continuity in FFS care ($t = 1.92$, $p < .10$). By contrast, the higher-income sick reported *no* differences between prepaid and fee-for-service care in provider continuity.

Summary

Table 6 summarizes findings for the typical individual across systems of care. Entries in the left-hand column indicate those features of care that were rated significantly more favorably ($p < .05$) by the typical individual in the GHC experimental group; features listed in the right-hand column were rated significantly more favorably by the typical individual in the FFS experimental group. Features of care for which we observed no statistically significant differences between the GHC and FFS experimental groups appear in the middle column.

Table 6 also notes similarities and differences in results when we compared the self-selected and experimentally assigned GHC groups, respectively, with the FFS group. For nine features of care (those listed in italics), we reached the same conclusion regardless of the groups compared. For the other features of care considered, conclusions differed when comparing experimental and self-selected groups. In all such cases, self-selected GHC enrollees rated these features more or as favorably as FFS, while experimental GHC enrollees rated them no more or less favorably than their FFS counterparts.

Table 5: Predicted Exit Satisfaction Scores by Initial Income and Health Status, GHCE and FFS (95 Percent Confidence Intervals in Parentheses)

Satisfaction Measure	*GHCE*	*FFS*	*Predicted Difference (GHCE Minus FFS)*	*GHCE*	*FFS*	*Predicted Difference (GHCE Minus FFS)*
	Low Income, Initial Poor Health			Low Income, Initial Good Health		
General satisfaction	11.62	12.52	-.90(-1.80,.01)*	12.25	12.42	-.17(-.80,.47)
Technical quality	17.36	17.93	-.57(-1.67,.52)	17.96	17.33	.62(-.14,1.38)
Provider continuity	7.31	7.85	-.54(-1.10,.01)	7.06	7.57	-.51(-1.00,-.02)*
	High Income, Initial Poor Health			High Income, Initial Good Health		
General satisfaction	11.61	12.89	-1.28(-2.03,-.53)†	12.38	12.92	-.54(-1.01,-.07)*
Technical quality	17.10	18.01	-.91(-1.69,-.13)*	18.08	18.54	-.46(-1.05,.12)
Provider continuity	7.55	7.51	.05(-.38,.48)	7.06	7.74	-.68(-1.01,-.35)‡

Note: The "poor health" subgroup included persons in the bottom fifth of the score distribution on the General Health Ratings Index at the experiment's outset [48]; the "good health" subgroup, in the upper two-fifths. The "low" per capita income group included those persons in the bottom fifth of the income distribution, and "high" income, in the top two-fifths. In 1983 dollars, the median per capita incomes of these two groups were $1,686 and $7,480, respectively.

* $p < .05$

† $p < .001$

‡ $p < .0001$

Table 6: Summary of Results

Feature of Care	*GHC Experimentals More Satisfied*	*Similar Satisfaction*	*FFS More Satisfied*
ACCESS	*Office waits**	*Office hours* Answers to questions Care in emergencies	*Appointment waits* *Parking* Travel time Convenience
AVAILABILITY		*Family doctors*	*Hospitals* Specialists
FINANCES	*Costs of care*		
QUALITY OF CARE		*Technical quality* Facilities	*Continuity of care* Interpersonal aspects
OVERALL			General satisfaction

*Entries in italics indicate those features of care for which both self-selected and experimental comparisons produced the same conclusions regarding differences between HMO and FFS in attitudes toward care. Other entries are features for which conclusions differed depending on whether self-selected or experimental groups were compared. See text for details.

DISCUSSION

Do people find the medical care delivered by a health maintenance organization (HMO) more or less acceptable than care provided by the fee-for-service (FFS) system? To address this question, we randomly assigned nonaged adults to receive free care at a mature HMO (Group Health Cooperative (GHC) of Puget Sound) or to free or pay FFS insurance plans in Seattle, Washington. We also studied a control group that had self-selected GHC. We examined consumers' attitudes toward access, availability, and quality of medical care as well as their overall satisfaction. The measures were self-administered at enrollment, exit, and periodically throughout the three- to five-year Rand Health Insurance Experiment (HIE). From our results we can draw several conclusions about how the HMO we studied affected consumer attitudes toward medical care relative to the FFS system.

ACCESSIBILITY AND AVAILABILITY OF CARE

First, the mechanisms most responsible for lower costs in the HMO, namely, reduced availability of hospital and specialty care, adversely affect attitudes toward the availability of these resources relative to FFS care. HMO enrollees can use only hospitals that are owned by or have contractual agreements with their HMO, and many HMOs restrict

access to (and thereby utilization of) hospital care [5,31]. Similarly, many specialty services are available to HMO enrollees only on referral. The HMO we studied, in particular, maintains a relatively low ratio of specialty to primary care providers on its staff. By contrast, because those with FFS insurance can choose from a wider range of providers, they encounter fewer constraints on the hospitals to which they can be admitted and on their self-referral to specialty care.

Second, individuals recognize the very different queuing mechanisms used by the HMO and FFS systems. GHC and other mature HMOs usually make patients wait on an appointment list rather than in the office, while FFS practices tend to handle demand for services by making patients wait longer in the office rather than on an appointment queue [6,16,33,34]. In our analyses, the HMO group rated office waits significantly more favorably, while the FFS sample had significantly more favorable attitudes toward appointment waits.

Third, the limited (relative to the FFS system) number of locations providing services to HMO enrollees adversely affects their attitudes toward travel time and convenience of the location of facilities. Because HMOs generally offer care at a single location or a relatively small number of satellites, physical access is more difficult than in the FFS system, with its more widely dispersed physicians' offices [35].

Fourth, HMO enrollees had attitudes toward financial aspects of care that were significantly more favorable even than those on the free FFS plan [25], which may seem surprising. The absence of cost-sharing does not mean, however, that people have no experience with the costs of their medical care. Indeed, free FFS participants often found they had to pay at least some portion of their medical bills out-of-pocket before filing a claim and receiving full reimbursement. Experimental HMO enrollees faced no such out-of-pocket payments. This advantage of prepaid care receives prominent mention in many HMOs' advertisements: "no paperwork, no forms, no claims to file."

For several reasons, we believe these conclusions regarding accessibility and availability can be generalized to other mature HMOs. We reach the same conclusions whether we compare the FFS group to the randomly assigned or the self-selected HMO samples, and other non-randomized studies report similar results [11,16]. Moreover, we see the same pattern of differences for the self-selected HMO and FFS samples at the experiment's outset, and for the randomly assigned groups three to five years later. Thus, the differences between the two systems influence consumers' attitudes toward accessibility and availability of services more than do any selection factors that may be operating.

HMOs that are younger or less well established than the one we studied may not use (or have not yet developed) similar ways of organizing and delivering services; this may be particularly true of newer HMOs that serve predominantly lower-income populations [11]. These conclusions should therefore be generalized very cautiously to HMOs that have developed in response to federal or state cost-containment initiatives for Medicaid beneficiaries.

QUALITY OF CARE

Of all the features of care we considered, *interpersonal aspects* are the most likely to have been affected by the transition of experimental HMO enrollees to a new system of care and the consequent disruption in their patient-provider relationships. The disruption caused by the experiment was not necessarily an artificial one. Because close to 90 percent of the U.S. population reports having a regular provider [36], most individuals must break a prior relationship when they enroll in an HMO. Previous studies of self-selected groups focused almost exclusively on the first year of HMO experience, and observed less favorable attitudes toward interpersonal aspects of care for new HMO enrollees than for those who chose to remain with FFS insurance [11,14,16]. Our analyses of attitudes toward interpersonal aspects reported after the experiment's first year showed more marked differences between HMO and FFS groups (favoring FFS care) than those we observed after three to five years [25]. Thus, at least some of the observed HMO-FFS difference in attitudes toward interpersonal aspects of care represents a transitory phenomenon. Differences between the systems are still significant after five years, however, which suggests that transition can not explain these results entirely.

One factor contributing to the persistence of significantly less favorable attitudes toward interpersonal care among HMO enrollees may well be their relative lack of provider continuity, which can interfere with the development of patient-provider relationships. We note that the HMO-FFS difference in attitudes toward interpersonal care (favoring FFS care) was more pronounced for those who began the study in poor health. Evidence suggests that such individuals, and particularly the higher-income sick, are more likely than the average person to have regular providers [10,37,38], and thus to have disrupted such relationships when they entered the HMO.

While most would agree that consumers are well qualified to rate the interpersonal aspects of their medical care, many object to placing any weight on consumers' *technical quality* assessments. They believe

that consumers have no basis for making such judgments, hold unrealistic expectations about their care, or consider as "good" what physicians would agree is medically unnecessary or inappropriate [39–41].

For several reasons, we do not expect consumers' ratings of technical quality to agree perfectly with judgments reached by physicians (or by those following quality-of-care algorithms developed by physicians). Physicians and patients certainly have different perspectives regarding the process of care. In particular, ratings on the Technical Quality measure used in the HIE reflect chiefly patients' perceptions of the thoroughness of their care [27], which is only one of the factors considered by physicians in judging technical quality. Thoroughness is, however, an important component of the care process, one that patients experience personally and often repeatedly, which gives them some basis for developing standards. Moreover, consumers' ratings of thoroughness correlate substantially with experimentally manipulated and physician-verified differences in the technical appropriateness of care [42]. Nonetheless, when the amount of care provided differs, consumers equate "more" with "better," even when some of the additional services they receive are known to be medically unnecessary [43].

Thus, were those in the high-income, initially sick group, who had significantly less favorable attitudes toward technical quality of care at the HMO, reacting to the withholding of services they wanted or expected? Certainly this group, perhaps more than others studied, previously had the ability to purchase the amount of care they considered thorough in the FFS system. In a system like the HMO, which restrains use of services, they may believe they are not getting what they consider thorough care. Findings from analyses of health status outcomes imply, particularly for this subgroup, that they were not denied services necessary to their care; in fact, HMO enrollees in the higher-income group who were in poor health at the study's outset showed measurable health improvements when compared with their FFS counterparts [44]. Taken together, these findings suggest that the less favorable rating of technical quality by higher-income, sick HMO enrollees reflects their equating less care with less thorough care.

Thus consumers, and particularly the higher-income sick group, appear to be applying standards for thoroughness they developed through prior experience with fee-for-service care to the different mix of care they receive in the HMO. Self-selected samples, who were no less satisfied with technical quality in the HMO than in FFS care, may have elected or stayed in the HMO because their standards are more congruent with the style of care practiced there—or they may have adjusted their preferences over time.

Finally, whether or not they reflect actual differences, these perceived differences in technical quality and interpersonal care are real for consumers: they represent an important factor in consumers' decisions to doctor-shop, purchase medically unnecessary services, file grievances, and disenroll from prepaid plans [11,29,43,45,46]. For example, across 11 prepaid health plans, the correlation between annual disenrollment rates and satisfaction with technical and interpersonal care were -0.86 and -0.90, respectively [9].

OVERALL SATISFACTION WITH CARE

Attitudes toward quality of care (technical and interpersonal aspects, as well as continuity of provider) receive the greatest weight when individuals rate their overall or general satisfaction with care [28,38]. As expected, given the pattern of results from experimental comparisons of the HMO and FFS samples, the HMO group reported significantly less overall satisfaction with their medical care. The observed difference meant that half again as many HMO as FFS enrollees consistently expressed dissatisfaction with their care overall. Moreover, significant differences in general satisfaction favored FFS care for three of the four health and income subgroups, although the magnitude of the differences varied. Thus, efforts to minimize overall dissatisfaction with HMO care, and its sequelae (e.g., disenrollment), must be addressed to all enrollees, rather than targeted to a specific subgroup.

POLICY IMPLICATIONS

Previously reported results from the Health Insurance Experiment [5] substantiate the claim that the HMO reduced considerably the costs of medical care relative to a free care plan in the FFS system. The desirability of such reductions depends, in addition to the cost-savings themselves, on the benefits that do (or do not) accrue to patients in terms of health and satisfaction.

Other results indicate that reductions in expenditures did not compromise health status of the typical individual enrolled in the HMO relative to a similar person in a free FFS plan [44]. Indeed, for those who were relatively well off, the HMO reduced use and may have improved health. By contrast, the HMO may have adversely affected some aspects of the health of lower-income individuals who began the study with health problems.

With respect to consumer satisfaction, findings suggest that differences in the features of care, and not in the amount of care received, explain observed differences between HMO and FFS experimental

enrollees' satisfaction. Experimental HMO enrollees expressed significantly less satisfaction overall with services and providers than did FFS experimental participants. We note that the cost-sharing plans in the FFS system achieved reductions in medical expenditures relative to the free FFS plan that were similar to those achieved by the HMO. In contrast to the HMO, however, cost-sharing FFS plans achieved levels of patient satisfaction no different from those observed for the free FFS plan.

Some of the reductions in satisfaction at the HMO had to do with the organizational features (namely, queuing, and availability of hospital and specialty care) that allow the HMO to restrict utilization and thereby achieve cost-savings [6]. Development of programs that can improve satisfaction without sacrificing cost-savings will be a challenge. Changes that might improve patients' attitudes toward the interpersonal aspects and thoroughness of their care need not necessarily cut into the cost-saving capabilities of the HMO. Were such changes feasible, they could reduce disenrollment, which adversely affects continuity (and thus quality) of care, and which threatens an HMO's viability and competitiveness. Plans that implement such changes are likely to do well in the competitive marketplace.

Particularly because we saw no adverse effects on health status for most experimental enrollees, the pattern of results regarding satisfaction with FFS relative to HMO care raises the question of how much the FFS advantage in satisfaction is worth. The relatively low market share held by HMOs—about 7 percent nationwide and some 15–25 percent in areas where HMOs are marketed [47]—suggests that this advantage may be worth a great deal, despite the fact that HMO premiums are often lower than FFS premiums plus expected cost-sharing. Differential employer subsidies and tax benefits, however, effectively reduce this monetary difference to the individual choosing a health insurance option, and thus reduce the market share of HMOs. As employers and the federal government react to escalating medical care costs with cost-containment strategies, these subsidies are likely to decrease or end altogether. This will leave the individual with a different calculation in making the tradeoff between reduced costs and greater satisfaction.

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